

MAXDATA Server PLATINUM 1500 IR M5

User's Manual

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1 Setting up the System

Server Position

Please take note of the following criteria for creating a practical and safe workplace when setting up your computer:

-  The system can be used anywhere the temperature is suitable for people. However, rooms with humidity over 70%, and dusty or dirty areas are not appropriate. In addition, do not expose the server to any temperatures over +30 °C or under +10 °C.
-  Make sure that the cables connecting the server to peripheral devices are not tight.
-  Make sure that all power and connection cables are positioned so that they are not trip hazards.
-  When you save data to your server's hard disks or to a floppy disk, they are stored as magnetic information on the media. Make sure that they are not damaged by magnetic or electromagnetic fields.
-  Because the electronics in your computer can be damaged by jarring, no mechanical devices should be placed on the same surface as the server. This is especially important for impact printers whose vibrations could damage the hard disk.
-  Please take care to ensure a free air flow to the server at all times. Do not block the ventilation slots of the server case and particularly the power supplies. An insufficient air flow may damage the server and / or it's components.

ATTENTION

In order to fully separate the server from current, the power cord must be removed from the wall outlet.

Connecting the System

Back Panel Connectors

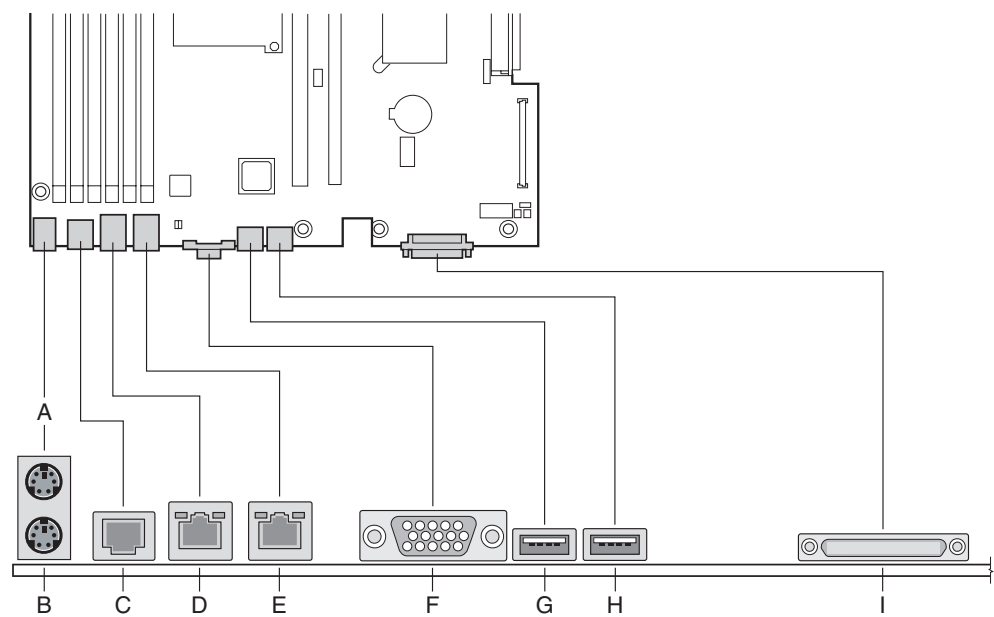


Figure 1. Back Panel Connectors

- A.

PS/2 mouse
- B.

PS/2 keyboard
- C.

Serial Port B
- D.

NIC port 1 (1 Gbps)
- E.

NIC port 2 (1 Gbps)
- F.

Video
- G.

USB port 1
- H.

USB port 2
- I.

SCSI channel B

Table 1. NIC LEDs

LED Color	LED State	Description
Left LED	Off	No network connection
	Solid Amber	Network connection in place
	Blinking Amber	Transmit/receive activity
Right LED	Off	10 Mbps connection (if left LED is on or blinking)
	Solid Amber	100 Mbps connection
	Solid Green	1000 Mbps connection

Standard Control Panel

The diagram below shows the features available on the Standard Control Panel. The Standard Control Panel is one of two required control options that can be selected. The other option is the Local Control Panel.

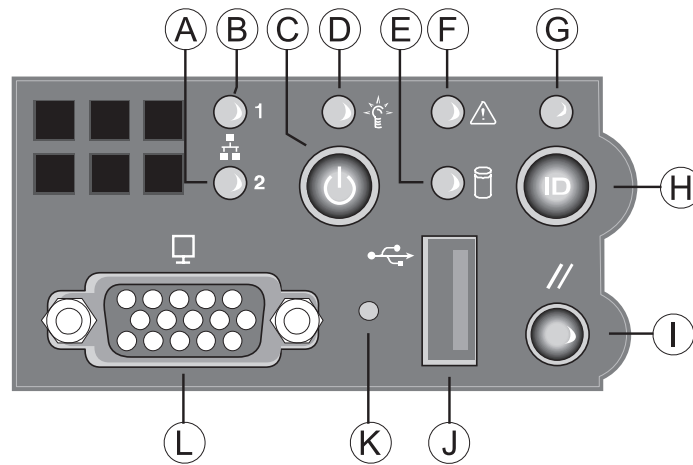


Figure 2. Standard Control Panel

Table 2. Standard Control Panel Features

Callout	Feature	Function
A	NIC 2 activity LED	Continuous green light indicates a link between the system and the network to which it is connected. Blinking green light indicates network activity.
B	NIC 1 activity LED	
C	Power/Sleep button	Toggles the system power on/off. Sleep button for ACPI compatible operating systems.
D	Power/Sleep LED	Continuous green light indicates the system has power applied to it. Blinking green indicates the system is in S1 sleep state. No light indicates the power is off / is in ACPI S4 or S5 state.
E	Hard disk drive activity LED	Random blinking green light indicates hard disk drive activity (SCSI or SATA). No light indicates no hard disk drive activity.
F	System Fault LED	Solid green indicates normal operation Blinking green indicates degraded performance Solid amber indicates a critical or non-recoverable condition Blinking amber indicates a non-critical condition No light indicates POST is running or the system is off.
G	System Identification LED	Solid blue indicates system identification is active No light indicates system identification is not activated
H	System Identification button	Toggles the front panel ID LED and the baseboard ID LED on and off. The baseboard LED is visible from the rear of the chassis and allows you to locate the server from the rear of a rack of systems.

(Continued)

Standard Control Panel Features (Continued)

I	Reset button	Reboots and initializes the system.
J	USB 2.0 port	Allows you to attach a USB component to the front of the chassis.
K	NMI button	Puts the server in a halt-state for diagnostic purposes.
L	Video port	Allows you to attach a video monitor to the front of the chassis. The front and rear video ports cannot be used at the same time.

Descriptions of the front panel LEDs are listed in the following table.

Table 3. Front Panel LED Description

LED Name	Color	Condition	Description
Power/Sleep LED	Green	ON	Power On
	Green	BLINK	Standby/Sleep (S1)
		OFF	Off (also Sleep S4)
Status	Green	ON	System Ready
	Green	BLINK	System ready, but degraded: some CPU fault, DIMM killed
	Amber	ON	Critical alarm: Critical power module failure, critical fan failure, voltage (power supply), voltage and thermal fault
	Amber	BLINK	Non-critical failure: Redundant fan failure, redundant power failure, non-critical power and voltage
		OFF	System not ready: Post error / NMI event / PCI or terminator missing
Hard Drive Activity	Green	BLINK	Hard drive activity
	Amber	ON	Fault
		OFF	No activity
NIC 1 Activity	Green	ON	Linked
	Green	BLINK	LAN activity
		OFF	Idle
NIC 2 Activity	Green	ON	Linked
	Green	BLINK	LAN activity
		OFF	Idle
ID LED (rack only)	Blue	BLINK	Server identification; Toggled by ID button or software
		OFF	Server identification; Toggled by ID button or software

2 Server Board Features

This chapter briefly describes the main features of the MAXDATA PLATINUM Server Board. This chapter provides a list of the server board features, and diagrams showing the location of important components and connections on the server board.

Table 4 summarizes the major features of the server board.

Table 4. Server Board Features

Feature	Description
Processors	Support for up to two Intel® Xeon™ Processors with an 800 MHz front side bus and frequencies starting at 2.8 GHz.
Memory	Memory mirroring and memory sparing options Six DIMM slots supporting DDR 266 MHz or DDR 333 MHz memory
Chipset	Intel® E7520 chipset, including: • E7520 MCH • PXH • Intel® 82801ER I/O Controller Hub 5-R (ICH-5R)
I/O Control	External connections: • Stacked PS/2 ports for keyboard and mouse • RJ45 Serial B port • Two RJ45 NIC connectors for 10/100/1000 Mbps connections • Two USB 2.0 ports • U320 high-density 80-pin SCSI connector (channel B) Internal connections: • Two USB port headers, each of which supports two USB 2.0 ports • One DH10 Serial A header • One Ultra320 80-pin SCSI connector (Channel A) • Two SATA-150 connectors with integrated RAID 0/1 support • One ATA-100 connector • SSI-compliant 34-pin, high-density 100-pin, and alternate 50-pin control panel headers • Intel® Management Module 120-pin connector, supporting the optional Professional and Advanced server management modules
Add-in Card	• One low-profile riser slot that supports a riser card capable of supporting upto three low-profile PCI-X 66 / 100 MHz add-in cards. • One full-height riser slot, utilizing Intel® Adaptive Slot technology. Capable of supporting riser cards that follow either PCI-X or PCI-Express® specifications. The riser cards can support upto three full-height, full-length PCI-X 66 / 100 MHz, PCI-X 133, or PCI-Express® add-in cards, depending on the riser card used.
Video	On-board ATI® RAGE XL video controller with 8 MB SDRAM

(Continued)

Server Board Features (Continued)

Hard Drive, Optical Drive, and Floppy Drive	Floppy Support: • Single Floppy channel accessed through either of two connectors. When integrated with either the SATA or SCSI backplanes in the MAXDATA PLATINUM 1500 IR or 2200 IR, the floppy controller signals are routed through the 100-pin flex cable. Other server configurations can use the legacy 24-pin connector. Use of both interfaces in a common server configuration is not supported. Ultra ATA/100 support: • Two IDE channels, each capable of supporting up to two drives. The primary channel routes through a 100-pin flex cable to the backplane providing Optical Drive support. SATA support: • Two SATA ports • RAID level 0/1 support SCSI support: • Dual-channel LSI Logic® 53C1030 Ultra320 SCSI controller - Implements LSI Logic® Fusion-MPT architecture - Supports LSI Logic® Integrated Mirroring and Striping technology • Zero-channel RAID supporting the RUBI-2 specification
LAN	Dual Intel® 82546GB 10/100/1000 NICs
Fans	• Two 3-pin SSI compliant single speed processor fan connectors • One 3-pin system fan connector with fan speed control. • One 20-pin fan connector providing fan speed control and monitoring for system fans in the MAXDATA PLATINUM 1500 IR and 2200 IR
Server Management / Diagnostics	• On-board Platform Instrumentation using the National Semiconductor PC87431M mini-Baseboard Management Controller (mBMC) (Default). • Support for optional Intel® Management Module - Advanced Edition or Professional Edition • Support for Intel® Server Management 8.x • Intel® Light-Guided Diagnostics on all field replaceable units (FRUs)

Connector and Header Locations

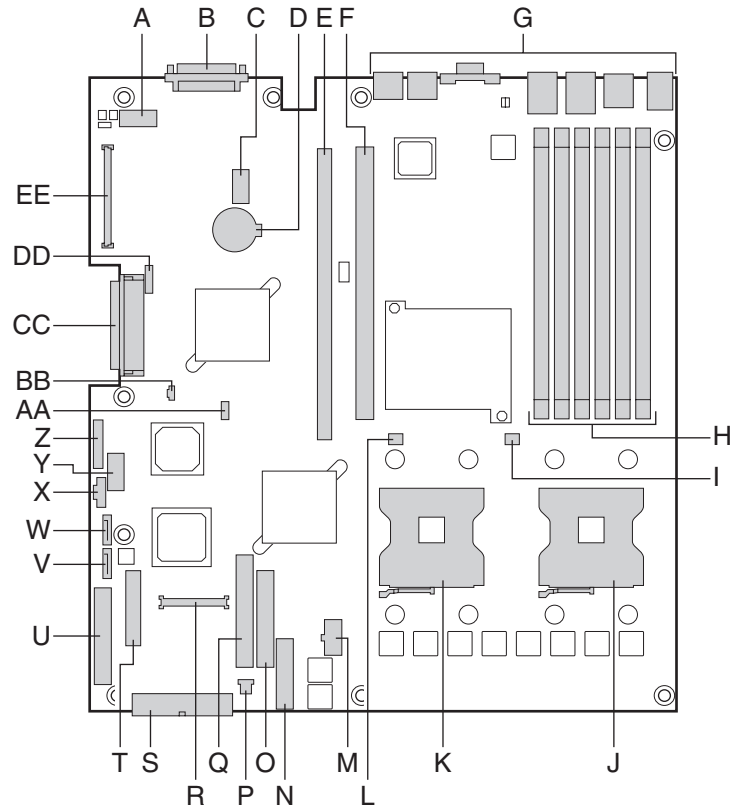


Figure 3. Server Board Connector and Component Locations

A. Serial Port A	L. Processor 2 fan header	W. SATA port 2
B. SCSI Channel B	M. +12V processor power	X. Power supply signal cable
C. 8-pin OEM connector	N. Fan board connector	Y. USB header (DH-10)
D. Battery	O. Floppy connector	Z. USB header (1 x 10)
E. Full-height riser slot	P. System fan 3-pin header	AA. IPMB connector
F. Low-profile riser slot	Q. Secondary IDE channel	BB. IDE power connector
G. Back panel I/O ports	R. Control panel 100-pin connector	CC. SCSI channel A
H. DIMM sockets	S. 24-pin SSI power connector	DD. ICMB connector
I. Processor 1 fan header	T. 50-pin control panel connector	EE. 120-pin connector for optional Intel® Management Module
J. Processor socket 1	U. 34-pin SSI control panel connector	
K. Processor socket 2	V. SATA port 1	

Configuration Jumpers

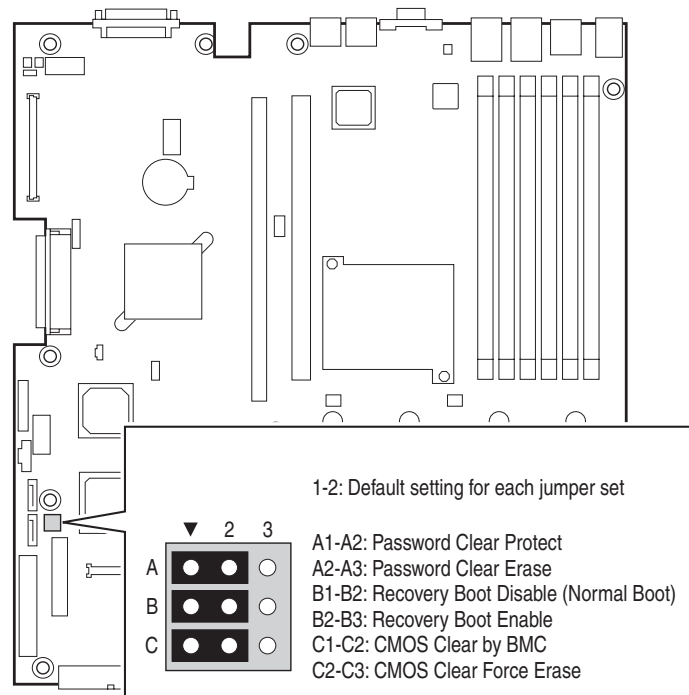


Figure 4. Configuration Jumper Location

Table 5. Configuration Jumper

Jumper Name	Pins	What happens at system reset...
Password Clear (line "A" in figure above)	1 - 2	These pins should be jumpered for normal system operation.
	2 - 3	If these pins are jumpered, administrator and user passwords will be cleared on the next reset. These pins should not be jumpered for normal operation.
Recovery Boot (line "B" in figure above)	1 - 2	These pins should be jumpered for normal system operation.
	2 - 3	If these pins are jumpered, the system will attempt to recover the BIOS by loading the BIOS code into the flash device from a floppy disk. This jumper is typically used when the BIOS has become corrupted. These pins should not be jumpered for normal operation.
CMOS Clear (line "C" in figure above)	1 - 2	These pins should be jumpered for normal system operation.
	2 - 3	If these pins are jumpered, the CMOS settings will be cleared on the next reset. These pins should not be jumpered for normal operation.

Hardware Requirements

Processor

One or two Intel® Xeon™ Processors with an 800 MHz front side bus must be installed. Processor frequencies from 2.8 GHz to 3.6 GHz are supported.

Memory

The server board provides six DIMM sockets across two channels, Channel A and Channel B. Channel A consists of DIMM sockets 1A, 2A, and 3A. Channel B consists of DIMM sockets 1B, 2B, and 3B.

If six DIMMs are installed, the following maximum capacities are possible:

- For DDR266 DIMMS: Maximum capacity of 24 GB
- For DDR333 DIMMS: Maximum capacity of 16 GB

A minimum of one 256 MB DIMM is required in DIMM socket 1A or 1B. This uses single-channel interleave. However, for dual-channel interleave, providing optimum performance, a minimum of two DIMMs should be installed in DIMM sockets 1A and 1B. Except for the option of installing a single DIMM in socket 1A or 1B, DIMMs must be installed in pairs and populated as follows:

- DIMM 1A and DIMM 1B: Populate these two sockets together first
- DIMM 2A and DIMM 2B: Populate these sockets in addition to DIMM 1A and DIMM 2A if four DIMMs are to be used.
- DIMM 3A and DIMM 3B: Populate these sockets after DIMM 1A, DIMM 1B, DIMM 2A, and DIMM 2B have been populated.

DIMMs must meet the following requirements:

- Use only registered DDR DIMM modules
- DDR266 and DDR333 memory can be mixed on the server board, but when mixing DIMM types, DDR333 memory will be treated as DDR266.
- Use only DIMMs with DIMM organization of x72 ECC
- Use only DIMMs with the capacities outlined in the following table can be used

Table 6. DIMM Module Memory Capacity Support

SDRAM Parts, SDRAM Technology	128 MB	256 MB	512 MB	1 GB
X8, single row	128 MB	256 MB	512 MB	1 GB
X8, double row	256 MB	512 MB	1 GB	2 GB
X4, single row	256 MB	512 MB	1 GB	2 GB
X4, stacked, double row	512 MB	1 GB	2 GB	4 GB

NOTE

When using Dual Rank (Double Row) DDR-333 DIMM technologies, a maximum of four loads per memory channel is supported. When all DIMMs used in the system match either of these technologies, a maximum of four DIMMs can be populated.

In determining your memory requirements, the need for memory sparing or memory mirroring must be considered.

Memory Sparing and Mirroring

The Intel® E7520 chipset includes hardware that supports memory mirroring and memory on-line sparing. Both memory mirroring and memory on-line sparing provide a way to prevent data loss in case a DIMM fails.

With memory mirroring the system maintains two copies of all data in the memory subsystem. If a DIMM fails, the data is not lost because the second copy of the data is available from the mirrored DIMM in the opposite channel. The system will not fail due to memory error unless both the primary and the mirrored copy of the data become corrupt at the same time.

In a mirrored system, the maximum usable memory is one-half of the installed memory, with four identical DIMMs installed in sockets 1A, 1B, 2A, and 2B. Since the data is duplicated across DIMMs, it means that up to one-half of the installed DIMMs are actively in use at any one time. The remaining DIMMs are used for mirroring:

- If the DIMM in socket 1A fails, the DIMM in socket 2B takes over.
- If the DIMM in socket 1B fails, the DIMM in socket 2A takes over.

For memory on-line sparing, one DIMM per channel is used as the memory spare. The spare DIMM is not available for use, but is kept in reserve. If a DIMM begins to fail, the content of the failing DIMM is copied to the spare DIMM in that channel. When all of the data is copied to the spare DIMM, the primary DIMM is removed from service and the spare DIMM takes its place.

When memory on-line sparing is used, the spare DIMMs must be equal to or larger than the largest in-service DIMM in that channel.

NOTE

Memory mirroring and memory sparing are mutually exclusive. Only one can be active at a time.

Optional Hardware

Intel® Management Module

Two versions of the Intel® Management Module are available to provide enhanced server management features.

- The Intel® Management Module - Professional Edition: contains a hardware mezzanine card that plugs into the server board.
- The Intel® Management Module - Advanced Edition: includes a hardware mezzanine card, 10/100 Mbps NIC mezzanine card, and cables.

Local Control Panel

The Local Control Panel provides enhanced system control by utilizing a LCD display, which provides additional controls and indicators beyond the standard control panel.



NOTE

Use of this feature requires the installation of either Intel® Management Module, Professional Edition or Advance Edition.

3 Server Chassis Features

This chapter briefly describes the main features of the MAXDATA PLATINUM 1500 IR Server Chassis. It provides a list of the server features, and diagrams showing the location of important components and connections on the server chassis.

Table 7 summarizes the major features of the server chassis.

Table 7. Server Chassis Features

Feature	Description
Dimensions	• 1.703 inches high • 16.930 inches wide • 26.457 inches deep
Hard Drives (dependent on option selected)	• Up to three fixed or hot-swap SATA or SCSI drives
Peripherals (dependent on option selected)	• Slimline bay for CD-ROM, DVD-ROM drive, or floppy drive • Kit to convert one hard drive bay into a floppy drive bay (optional accessory) • PCI riser card bracket
Fans	Support for up to seven system fans, including two fans in the power supply
Control Panel (dependent on option selected)	Standard Control Panel: Local Control Panel (requires installation of an optional Management Module)
LEDs and displays (dependent on option selected)	With Standard Control Panel: • NIC1 Activity • NIC2 Activity • Power / Sleep • System Status • System Identification • Hard Drive Activity With Local Control Panel: • additional LCD Display
Power Supply	One 500 W power supply
System Security	• Lockable front bezel (optional accessory) • Chassis intrusion switch • Lock attach point for chassis cover
Fans	• Four 40 x 40 x 56 mm dual-rotor fans • One 40 x 40 x 28 mm single rotor fan • Two 40 x 40 x 28 mm fans in the power supply
USB (dependent on option selected)	• One front panel USB port with Standard Control Panel • Two front panel USB ports with Local Control Panel • Two back panel USB ports
Video	• One front panel video port (available only with Standard Control Panel) • One rear panel video port

Component Identification

Internal Components

The diagram below shows the server chassis with a server board installed into it.

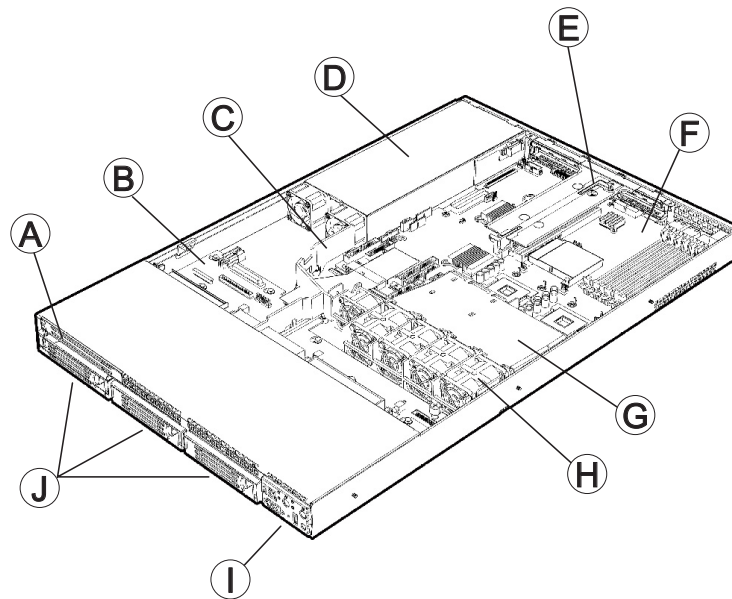


Figure 5. Internal Component Locations

- | | |
|---|--|
| A. Slimline drive bay (drive not included) | F. Server board |
| B. Backplane (optional component) | G. Processor air duct |
| C. Power supply air baffle | H. Fan module |
| D. Power supply | I. Control panel (Standard Control Panel shown) |
| E. PCI add-in card riser assembly | J. Hard drive bays (drives not included) |

Local Control Panel

The diagram below shows the features available on the Local Control Panel. The Local Control Panel is one of two required control options that can be selected. The other option is the Standard Control Panel.



NOTE

This control panel requires the installation of a Management Module, Professional Edition or Advanced Edition.

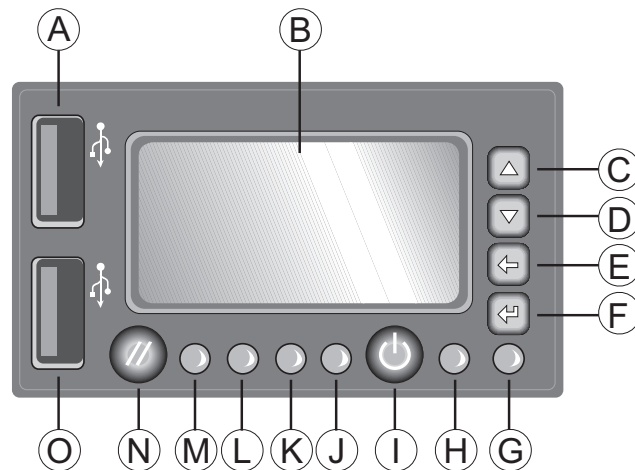


Figure 6. Local Control Panel

Table 8. Local Control Panel Features

Callout	Feature	Function
A	USB 2.0 port	Allows you to attach a USB component to the front of the chassis.
B	LCD display	Screen on which system information is displayed.
C	Menu control button, scroll up	Scroll up one option at a time.
D	Menu control button, scroll down	Scroll down one option at a time.
E	Menu control button, scroll left	Move to the previous option.
F	Menu control button, scroll right	Move to the previous page.
G	System Identification LED	Solid blue indicates system identification is active. No light indicates system identification is not activated.

Local Control Panel Features (Continued)

H	Power/Sleep LED	Continuous green light indicates the system has power applied to it. Blinking green indicates the system is in S1 sleep state. No light indicates the power is off / is in ACPI S4 or S5 state.
I	Power/Sleep button	Toggles the system power on/off. Sleep button for ACPI compatible operating systems.
J	System Status LED	Solid green indicates normal operation. Blinking green indicates degraded performance. Solid amber indicates a critical or non-recoverable condition. Blinking amber indicates a non-critical condition. No light indicates POST is running or the system is off.
L K	NIC 1 activity LED NIC 2 activity LED	Continuous green light indicates a link between the system and the network to which it is connected. Blinking green light indicates network activity.
M	Hard disk drive status LED	Random blinking green light indicates hard disk drive activity. No light indicates no hard disk drive activity is taking place.
N	Reset button	Reboots and initializes the system.
O	USB 2.0 port	Allows you to attach a USB component to the front of the chassis.

Back Panel Features

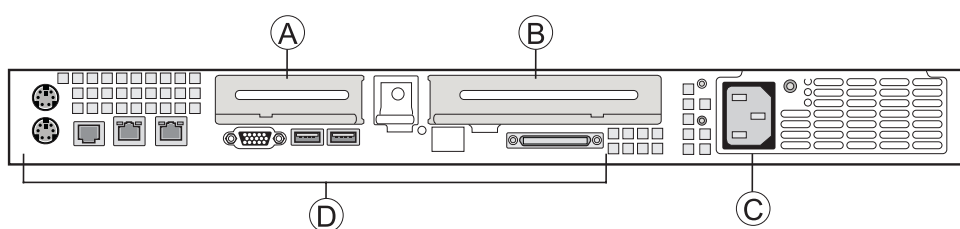


Figure 7. Chassis Back

- A.** Low-profile add-in card bracket
- B.** Full-height add-in card bracket
- C.** AC power receptacle
- D.** I/O ports (see note)

NOTE

See the board section of the documentation for port identification.

Peripheral Devices

The chassis provide locations and hardware for installing hard drives, a floppy drive, CD-ROM drive, or DVD-ROM drive. The following figure shows the available options.

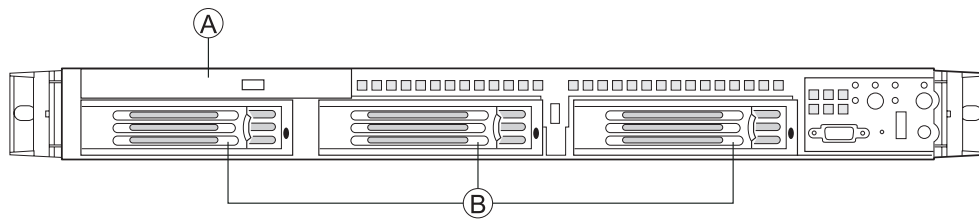


Figure 8. Optional Peripherals

- A. Slimline floppy drive / DVD-ROM drive / CD-ROM drive
- B. Hard drive bays (3)

Hard Disk Drives

The chassis ships with three drive carriers for installing three SCSI drives. One left drive bay can be converted to be used as a floppy bay.

4 Hardware Installations and Upgrades

Before You Begin

Before working with your server product, pay close attention to the safety instructions at the beginning of this manual.

Tools and Supplies Needed

- Phillips (cross head) screwdriver (#1 bit and #2 bit)
- Needle-nosed pliers
- Antistatic wrist strap and conductive foam pad (recommended)

System References

All references to left, right, front, top, and bottom assume the reader is facing the front of the chassis as it would be positioned for normal operation.

Removing and Installing the Chassis Cover

Removing the Chassis Cover

The Server Chassis must be operated with the top cover in place to ensure proper cooling. You will need to remove the top cover to add or replace components inside of the platform. Before removing the top cover, power down the server and unplug all peripheral devices and the AC power cable. None of the components inside of the chassis is hot-swappable.

NOTE

A nonskid surface or a stop behind the chassis may be needed to prevent the chassis from sliding on your work surface.

1. Observe the safety and ESD precautions at the beginning of this book.
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Disconnect the AC power cord.
4. Remove the shipping screw if it is installed. See letter "A" in the figure below.
5. While holding in the blue button at the top of the chassis in (see letter "B"), slide the top cover back until it stops (See letter "C").
6. Lift the cover upward to remove it.

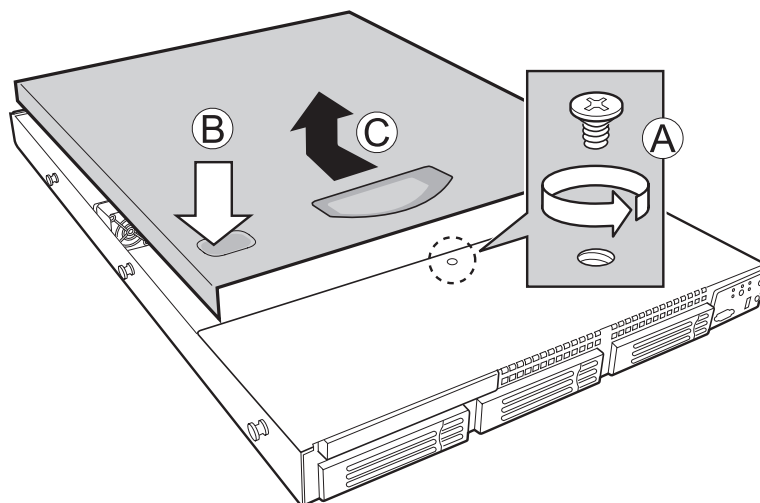


Figure 9. Removing the Chassis Cover

Removing and Installing the Front Bezel

Two front bezel options are available. One is used for the Standard Control Panel and the other is used with the Local Control Panel. Note the orientation in the figures below – the control panel is at the right. If you are installing a bezel on your chassis, make sure you position it as shown.

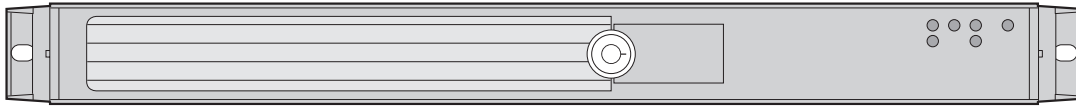


Figure 10. Standard Front Bezel

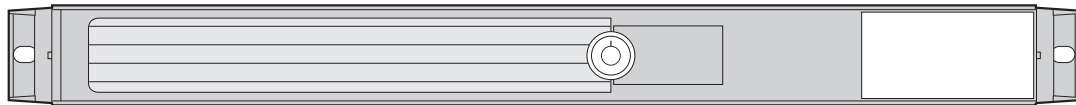


Figure 11. Local Control Panel Front Bezel

Removing the Front Bezel

1. Disconnect any cables attached to the control panel.
2. Pull the bezel out from the chassis.

Installing the Front Bezel

1. At each end of the bezel, line up the center notch on the bezel with the center guide on the rack handles.
2. Push the bezel onto the front of the chassis until it clicks into place.

Installing and Removing a Hard Disk Drive

Installing Hot-swap Hard Disk Drive

1. Remove the front bezel if it is installed
2. Press in on the green latch at the front of the hard drive carrier. See letter "A" in the figure below.
3. Pull out on the black lever and slide the carrier from the chassis. See letter "B" in the figure below.

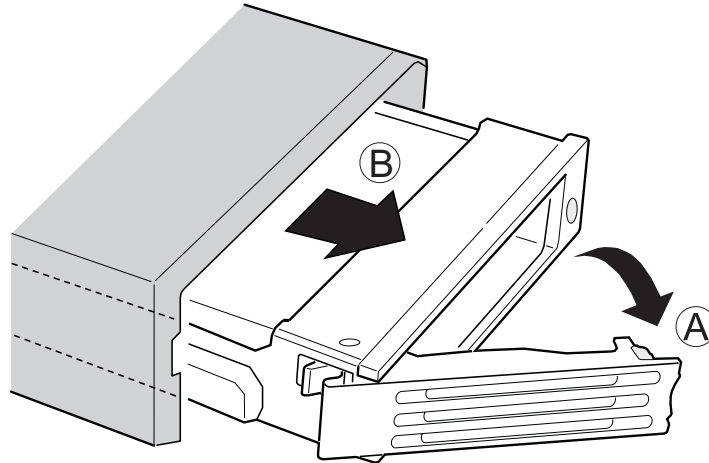


Figure 12. Removing a Hot-swap Hard Drive Carrier from Chassis

4. Remove the four screws that attach the plastic retention device or the previously installed hard drive to the drive carrier. Two screws are at each side of the retention device or the hard drive. Store the plastic retention device for future use.

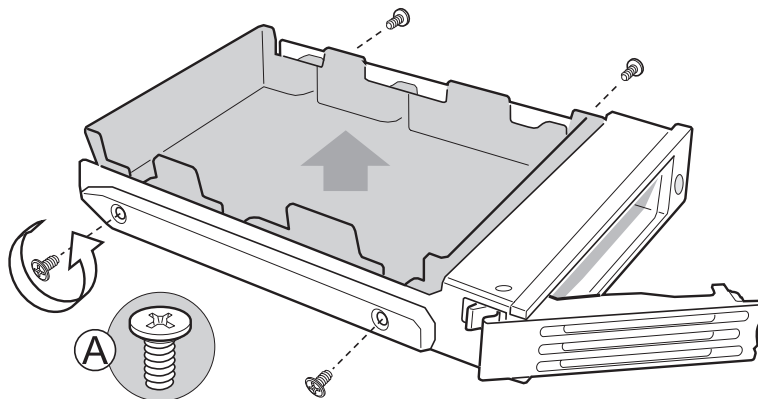


Figure 13. Removing the Retention Device from a Hot-swap Drive Carrier

5. Remove the hard drive from its wrapper and place it on an antistatic surface.
6. Set any jumpers and/or switches on the drive according to the drive manufacturer's instructions.
7. With the drive circuit-side down, position the connector end of the drive so that it is facing the rear of the drive carrier. See Error! Reference source not found.
8. Align the holes in the drive to the holes in the drive carrier and attach it to the carrier with the screws that were attached to the plastic retention device.
9. With the black lever in the fully open position, slide the drive assembly into the chassis. The green latch at the front of the drive carrier must be to the right. Do not push on the black drive carrier lever until the lever begins to close by itself.
10. When the black drive carrier lever begins to close by itself, push on it to lock the drive assembly into place.

Removing Hot-swap Hard Disk Drive

1. Remove the front bezel if it is installed.
2. Press in on the green latch at the front of the hard drive carrier.
3. Pull out on the black lever to slide the carrier from the chassis.
4. Remove the four screws that attach the hard drive to the drive carrier. Lift the drive from the carrier. Store the drive in an anti-static bag.
5. If you are not installing a new drive, place the plastic retention device into the drive carrier, using the four screws you removed from the hard drive.
6. Insert the screws that held the drive in the carrier into the screw locations on the carrier for future use.
7. With the black lever in the fully open position, slide the drive carrier into the chassis. The green latch must be to the right. Do not push on the black lever until the lever begins to close by itself.

NOTE

For proper airflow, the hard drive carrier must be replaced in the chassis, even if no hard drive is installed in it.

8. When the black lever begins to close by itself, push on it to lock the drive carrier into place.

Installing and Removing a PCI Riser Connector

You received your server chassis with your choice of one of two PCI riser connectors:

- A full-height PCI-Express riser with one PCI-Express® x8 slot
- A full-height PCI-X riser with one PCI-X slot



CAUTION

PCI riser connectors are NOT hot swappable. Before removing or replacing the riser connector, you must first take the server out of service, turn off all peripheral devices connected to the system, turn off the system by pressing the power button, and unplug the AC power cord from the system or wall outlet.

Installing a PCI Riser Connector

To install the PCI riser connector, use the following instructions.

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover.
4. Pull up on the two latches on the assembly. See letter "A" in the figure below.
5. Lift the PCI riser assembly from the chassis.

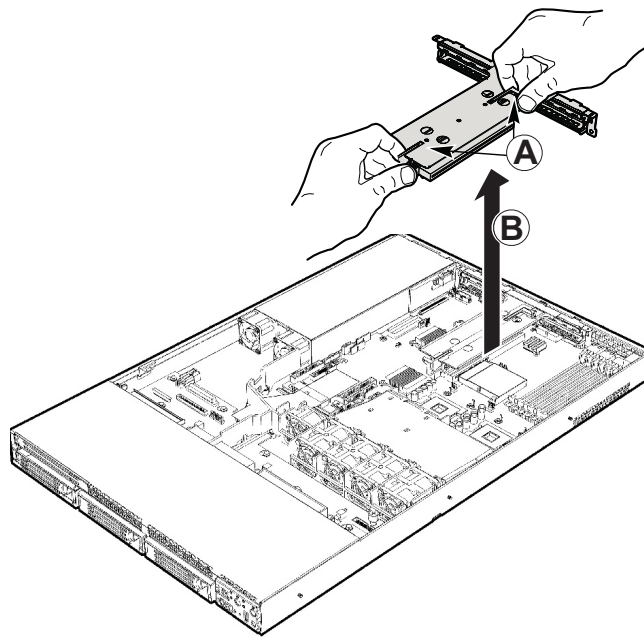


Figure 14. Removing the PCI Riser Assembly from the Chassis

6. Line up the screws on the riser assembly with the slot and the large hole on the riser connector.
7. Press and hold the blue riser locking lever. See letter "A" in the figure below.
8. Place riser connector onto the retention pins
9. Slide the riser connector to the right to lock it into place.
10. Release the blue locking lever.

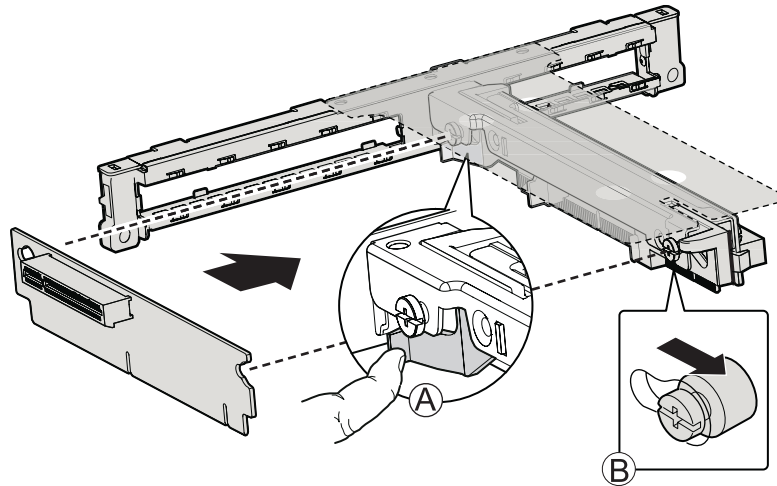


Figure 15. Installing an Add-in Card Connector into the PCI Riser Assembly

11. Install a PCI add-in card, if desired. For instructions, see "Installing a PCI Add-in Card."
12. Position the riser assembly over the PCI sockets on the server board (see letter "A" in the figure below), lining up the four hooks at the rear of the riser assembly (see letter "B") with the four slots in the rear of the chassis (see letter "C").
13. Push the riser assembly down until the assembly is securely seated.

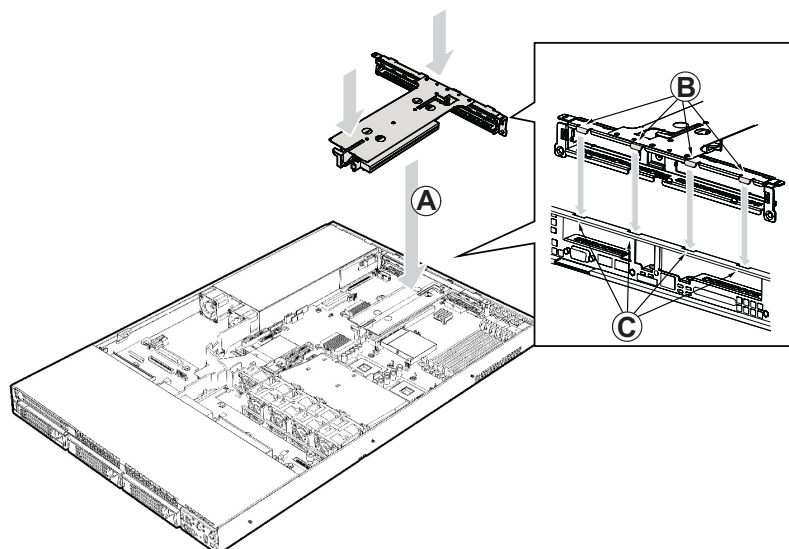


Figure 16. Installing the PCI Riser Assembly into the Chassis

14. Install the chassis cover.
15. Plug all peripheral devices and the AC power cable back into the server.

Installing and Removing a PCI Add-in Card

Installing a PCI Add-in Card

In the slots provided by the PCI riser connector, you can install either one or two add-in cards. Use the following instructions to install an add-in card.

1. Observe the safety and ESD precautions at the beginning of this book.
2. Power down the server and unplug all peripheral devices and the AC power cable.
3. Remove the chassis cover.
4. Pull up on the two latches on the assembly. See letter "A" in the figure below.
5. Lift the PCI riser assembly from the chassis.

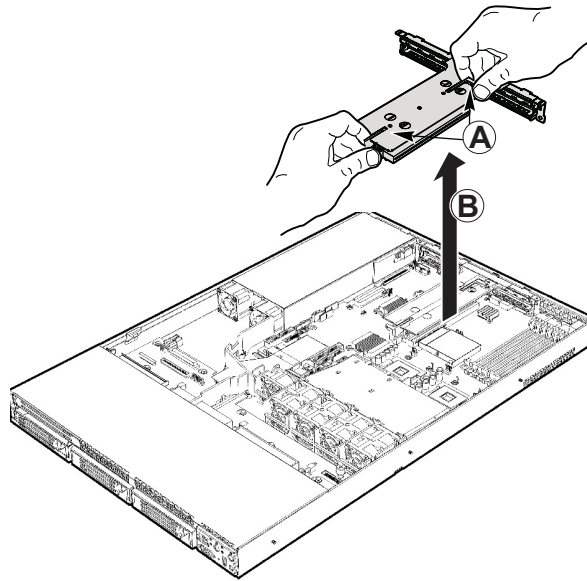


Figure 17. Removing the PCI Riser Assembly from the Chassis

6. Open the PCI retention clip on the PCI riser card assembly. See letter "A" in the figure below.
7. Remove the filler panel at the back of the riser assembly. See letter "B" in the figure below.
8. Insert the add-in card until it seats in riser card connector. Make sure the bracket inserts into the matching slot. See letter "C".
9. Close the retention clip. See letter "A" in the figure.

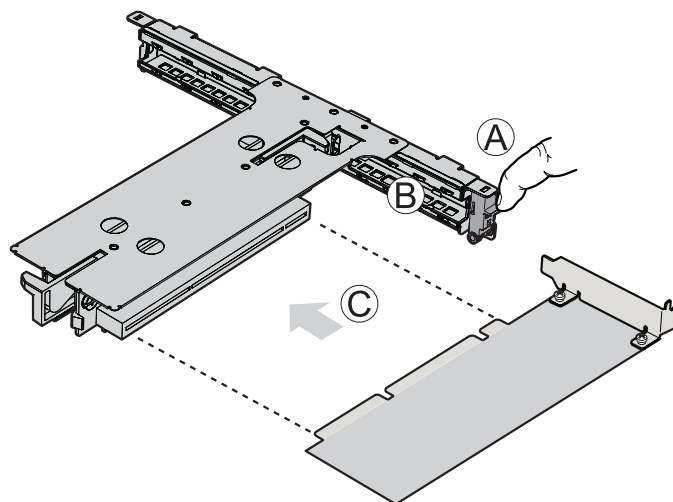


Figure 18. Installing an Add-in Card to the PCI Riser Assembly

10. Position the riser assembly over the PCI sockets on the server board (see letter "A" in the figure below), lining up the four hooks at the rear of the riser assembly (see letter "B") with the four slots in the rear of the chassis (see letter "C").
11. Push the riser assembly down until the assembly is securely seated.

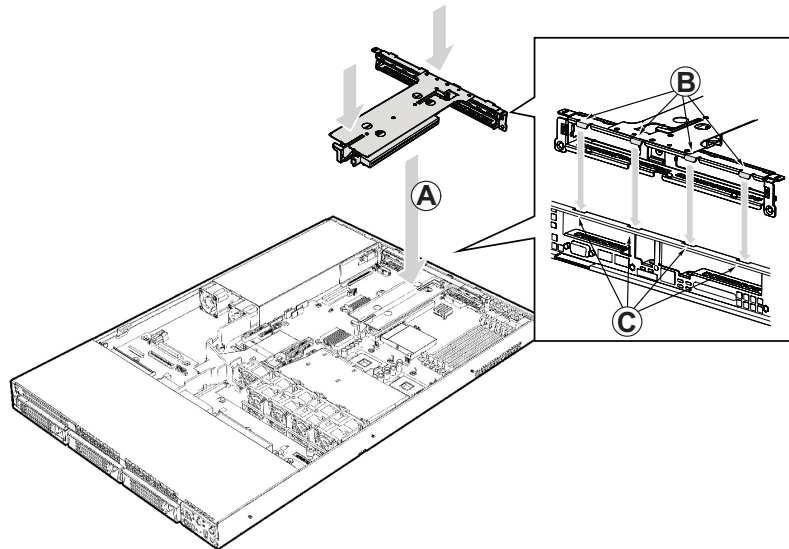


Figure 19. Installing the PCI Riser Assembly into the Chassis

12. Install the chassis cover.
13. Plug all peripheral devices and the AC power cable back into the server.

Installing and Removing Memory

The silk screen on the board for the DIMMs displays DIMM 1B, DIMM 1A, DIMM 2B, DIMM 2A, DIMM 3B, DIMM 3A starting from the edge of the board.

Installing DIMMs

To install DIMMs, follow these steps:

1. Observe the safety and ESD precautions at the beginning of this book.
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Disconnect the AC power cord from the server.
4. Remove the chassis cover and locate the DIMM sockets.

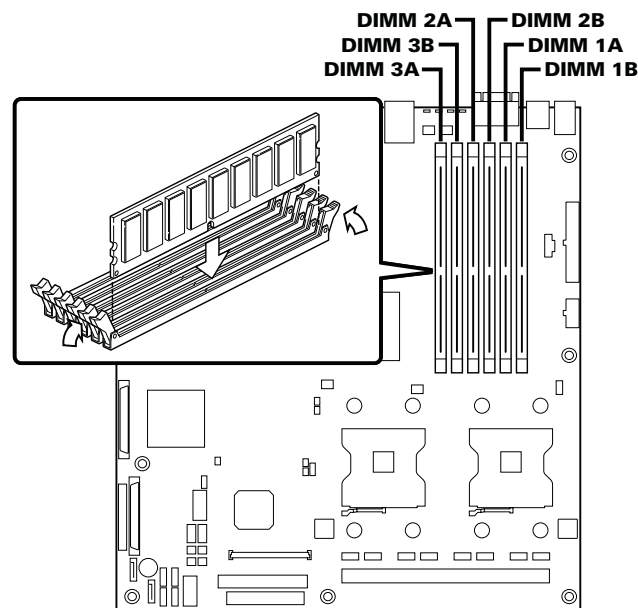


Figure 20. Installing Memory

5. Make sure the clips at either end of the DIMM socket(s) are pushed outward to the open position.
6. Holding the DIMM by the edges, remove it from its anti-static package.
7. Position the DIMM above the socket. Align the small notch in the bottom edge of the DIMM with the key in the socket.
8. Insert the bottom edge of the DIMM into the socket.
9. When the DIMM is inserted, carefully push straight down on the top edge of the DIMM until the retaining clips snap into place. Make sure the clips are firmly in place.
10. Replace the chassis cover and reconnect the AC power cord.

Installing or Replacing the Processor



CAUTIONS

Processor must be appropriate: You may damage the server board if you install a processor that is inappropriate for your server.

ESD and handling processors: Reduce the risk of electrostatic discharge (ESD) damage to the processor by doing the following: (1) Touch the metal chassis before touching the processor or server board. Keep part of your body in contact with the metal chassis to dissipate the static charge while handling the processor. (2) Avoid moving around unnecessarily.

Installing the Processor

To install a processor, follow these instructions:

1. Observe the safety and ESD precautions at the beginning of this book.
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Disconnect the AC power cord from the server.
4. Remove the chassis cover and locate the processor sockets.
5. Locate the processor socket and raise the socket handle completely.

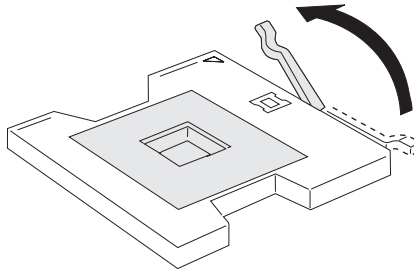


Figure 21. Opening Socket Lever

6. Align the pins of the processor with the socket, and insert the processor into the socket.



NOTE

Make sure the alignment triangle mark and the alignment triangle cutout align correctly (see Figure on next page).

7. Lower the socket lever completely.

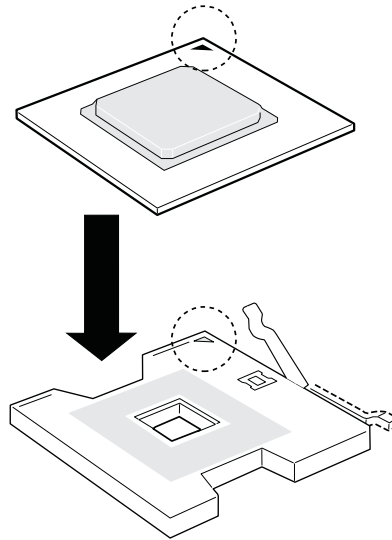


Figure 22. Inserting Processor

Installing the Heat Sink(s)

1. The heat sink has Thermal Interface Material (TIM) located on the bottom of it. Use caution when you unpack the heat sink so you do not damage the TIM.
2. Set the heat sink over the processor, lining up the four captive screws with the four posts surrounding the processor.
3. Loosely screw in the captive screws on the heat sink corners in a diagonal manner. Do not fully tighten one screw before tightening another.
4. Gradually and equally tighten each captive screw until all screws are tight.

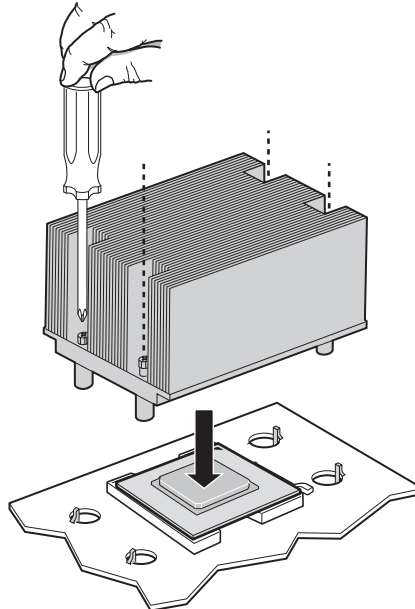


Figure 23. Installing Heat Sink

5. Reinstall and reconnect any parts you removed or disconnected to reach the processor sockets.
6. Replace the server's cover and reconnect the AC power cord. See the documentation that accompanied your server chassis for instructions on installing the server's cover.

Removing a Processor

1. Observe the safety and ESD precautions at the beginning of this book.
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Remove the AC power cord from the server.
4. Remove the chassis cover.
5. Unplug the processor fan cable from the server board.
6. Loosen the four captive screws on the corners of the heat sink.
7. Twist the heat sink slightly to break the seal between the heat sink and the processor.
8. Lift the heat sink from the processor. If it does not pull up easily, twist the heat sink again. Do not force the heat sink from the processor. Doing so could damage the processor.
9. Lift the processor lever.
10. Remove the processor.
11. If installing a replacement processor, see "Installing the Processor." Otherwise, reinstall the chassis cover.

RJ45 Serial Port Configuration

The RJ45 serial port connector can be configured to support either a DSR signal or a DCD signal. As the server board is shipped, it is configured to support DSR signals. To change the configuration to support DCD signals a jumper on the board must be changed. Use the following instructions to configure your server board to support DCD signals.

1. Observe the safety and ESD precautions at the beginning of this book.
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Disconnect the AC power cord from the server.
4. Remove the server's cover.
5. Locate the jumper block for the serial port. See figure 24.
6. Move the jumper from the default position covering pins 1 and 3 to cover pins 2 and 4.

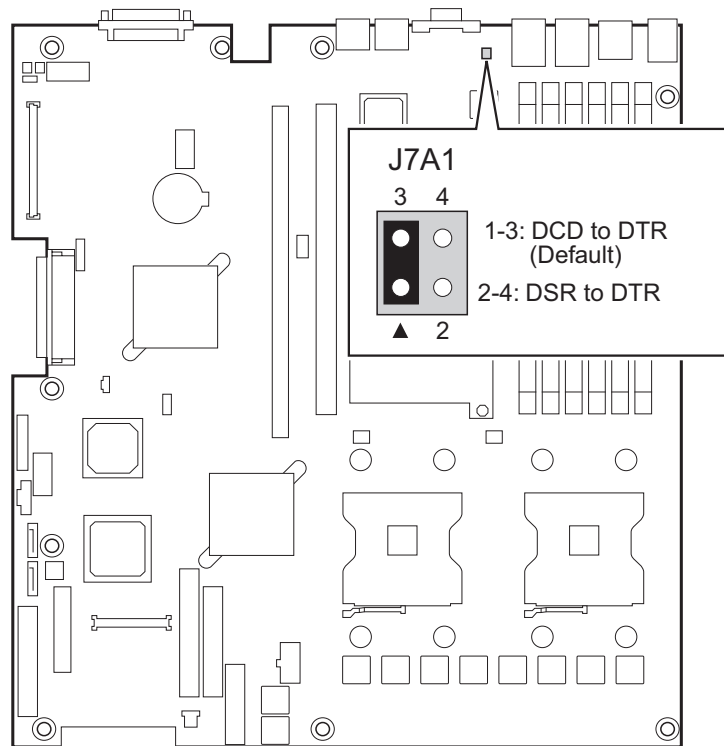


Figure 24. Changing the Serial Port Configuration

Replacing the Backup Battery

The lithium battery on the server board powers the RTC for up to 10 years in the absence of power. When the battery starts to weaken, it loses voltage, and the server settings stored in CMOS RAM in the RTC (for example, the date and time) may be wrong. Contact your customer service representative or dealer for a list of approved devices.



WARNING

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.



WARNUNG

Wenn eine ungeeignete Batterie eingesetzt wird oder die Batterie falsch eingesetzt wird, besteht Explosionsgefahr. Ersetzen Sie verbrauchte Batterien nur durch Batterien gleichen oder äquivalenten Typs, der vom Hersteller empfohlen wurde. Entsorgen Sie die verbrauchte Batterie entsprechend den Anweisungen des Herstellers.



AVERTISSEMENT

Danger d'explosion en cas de remplacement incorrect de la pile. Remplacez-la uniquement par une pile du même type ou d'un type équivalent recommandé par le fabricant. Mettez au rebut les piles usagées en vous conformant aux instructions du fabricant.



OSTRZEŻENIE

Nieprawidłowa wymiana baterii grozi eksplozją. Wymieniać tylko na taki sam lub równoważny typ, zalecany przez producenta. Zużyte baterie utylizować zgodnie z instrukcjami producenta.



ADVARSEL!

Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.



ADVARSEL

Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.



VARNING

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.



VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

1. Observe the safety and ESD precaution.
2. Turn off all peripheral devices connected to the server. Turn off the server.
3. Disconnect the AC power cord from the server.
4. Remove the server's cover and locate the battery. See the documentation that accompanied your server chassis for instructions on removing the server's cover.
5. Insert the tip of a small flat bladed screwdriver, or an equivalent, under the tab in the plastic retainer. Gently push down on the screwdriver to lift the battery.
6. Remove the battery from its socket.

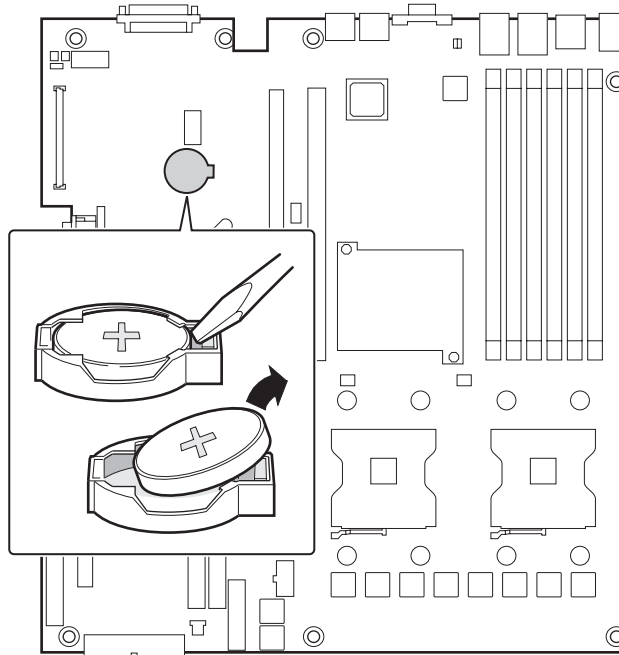


Figure 25. Replacing the Backup Battery

7. Dispose of the battery according to local ordinance.
8. Remove the new lithium battery from its package, and, being careful to observe the correct polarity, insert it in the battery socket.
9. Close the chassis.
10. Run Setup to restore the configuration settings to the RTC.

5 Server Utilities

Using the BIOS Setup Utility

This section describes the BIOS Setup Utility options, which is used to change server configuration defaults.

Starting Setup

You can enter and start BIOS Setup under several conditions:

- When you turn on the server, after POST completes the memory test
- When you have moved the CMOS jumper on the server board to the “Clear CMOS” position (enabled)

In the two conditions listed above, during the Power On Self Test (POST), you will see this prompt:

Press <F2> to enter SETUP

In a third condition, when CMOS/NVRAM has been corrupted, you will see other prompts but not the <F2> prompt:

Warning: CMOS checksum invalid

Warning: CMOS time and date not set

In this condition, the BIOS will load default values for CMOS and attempt to boot.

If You Cannot Access Setup

If you are not able to access BIOS Setup, you might need to clear the CMOS memory. For instructions on clearing the CMOS, see “Clearing the CMOS”.

Setup Menus

Each BIOS Setup menu page contains a number of features. Except for those features that are provided only to display automatically configured information, each feature is associated with a value field that contains user-selectable parameters. These parameters can be changed if the user has adequate security rights. If a value cannot be changed for any reason, the feature’s value field is inaccessible.

Table 9 describes the keyboard commands you can use in the BIOS Setup menus.

Table 9. Keyboard Commands

Press	Description			
<F1>	Help - Pressing F1 on any menu invokes the general Help window.			
← →	The left and right arrow keys are used to move between the major menu pages. The keys have no affect if a submenu or pick list is displayed.			
↑	Select Item up -The up arrow is used to select the previous value in a menu item’s option list, or a value field pick list. Pressing the Enter key activates the selected item.			
↓	Select Item down -The down arrow is used to select the next value in a menu item’s option list, or a value field pick list. Pressing the Enter key activates the selected item.			
F5/-	Change Value -The minus key or the F5 function key is used to change the value of the current item to the previous value.This key scrolls through the values in the associated pick list without displaying the full list.			
F6/+	Change Value -The plus key or the F6 function key is used to change the value of the current menu item to the next value.This key scrolls through the values in the associated pick list without displaying the full list. On 106-key Japanese keyboards, the plus key has a different scan code than the plus key on the other keyboard, but it has the same effect.			
<Enter>	Execute Command -The Enter key is used to activate submenus when the selected feature is a submenu, or to display a pick list if a selected feature has a value field, or to select a sub-field for multi-valued features like time and date. If a pick list is displayed, the Enter key will undo the pick list, and allow another selection in the parent menu.			
<Esc>	Exit -The ESC key provides a mechanism for backing out of any field.This key will undo the pressing of the Enter key. When the ESC key is pressed while editing any field or selecting features of a menu, the parent menu is re-entered. When the ESC key is pressed in any submenu, the parent menu is re-entered. When the ESC key is pressed in any major menu, the exit confirmation window is displayed and the user is asked whether changes can be discarded.			
<F9>	Setup Defaults - Pressing F9 causes the following to appear: <table><tr><td>Setup Confirmation</td></tr><tr><td>Load default configuration now?</td></tr><tr><td>[Yes] [No]</td></tr></table> If “Yes” is selected and the Enter key is pressed, all Setup fields are set to their default values. If “No” is selected and the Enter key is pressed, or if the ESC key is pressed, the user is returned to where they were before F9 was pressed without affecting any existing field values.	Setup Confirmation	Load default configuration now?	[Yes] [No]
Setup Confirmation				
Load default configuration now?				
[Yes] [No]				
<F10>	Save and Exit - Pressing F10 causes the following message to appear: <table><tr><td>Setup Confirmation</td></tr><tr><td>Save Configuration changes and exit now?</td></tr><tr><td>[Yes] [No]</td></tr></table> If “Yes” is selected and the Enter key is pressed, all changes are saved and Setup is exited. If “No” is selected and the Enter key is pressed, or the ESC key is pressed, the user is returned to where they were before F10 was pressed without affecting any existing values.	Setup Confirmation	Save Configuration changes and exit now?	[Yes] [No]
Setup Confirmation				
Save Configuration changes and exit now?				
[Yes] [No]				

Clearing the Password

If the user or administrator password(s) is lost or forgotten, moving the password clear jumper into the "clear" position clears both passwords. The password clear jumper must be restored to its original position before a new password(s) can be set. The password clear jumper is shown on the line labeled "A" in figure 4.

1. Power down the system and disconnect the AC power.
2. Open the server chassis.
3. Move the jumper from the normal operation position, Password Clear Protect, at pins 1 and 2 to the Password Clear Erase position, covering pins 2 and 3.
4. Reconnect the AC power, power up the system.
5. Power down the system and disconnect the AC power.
6. Return the Password Clear jumper to the Password Clear Protect position, covering pins 1 and 2.
7. Close the server chassis.
8. Reconnect the AC power and power up the server.

Clearing the CMOS

If you are not able to access the BIOS setup screens, the CMOS Clear jumper will need to be used to reset the configuration RAM. The CMOS Clear jumper is shown on the line labeled "C" in figure 4.

1. Power down the system and disconnect the AC power.
2. Open the server.
3. Move the jumper from the normal operation position, CMOS Clear by BMC, at pins 1 and 2 to the CMOS Clear Force Erase position, covering pins 2 and 3 as indicated in the following diagram.
4. Reconnect the AC power, power up the system.
5. When the system begins beeping, power it down and disconnect the AC power.
6. Return the CMOS Clear jumper to the CMOS Clear by BMC location, covering pins 1 and 2.
7. Close the server chassis.
8. Reconnect the AC power and power up the system.

6 Troubleshooting

This chapter helps you identify and solve problems that might occur while you are using the system.

LED Information

The MAXDATA PLATINUM Server Board includes LEDs that can aid in troubleshooting your system. A table of these LEDs with a description of their use is listed below.

Table 10. LED Information

LED Name	Function	Location	Color	Notes
ID	Aid in server identification from the back panel	Control panel and board rear left corner	Blue	Press ID LED button or user Server Management software to turn on the LED.
System fault	Visible fault warning	Control panel and board rear left corner	Green or Amber	• Green = No Fault • Green Blink = degraded • Amber = critical error or non-recoverable • Amber blink = non-critical
ATA drive activity	ATA drive activity	Control panel	Green	Blinking = Activity. No action required.
Memory fault 1–6	Identify failing memory module	DIMM end rear of board	Amber	On = Fault
Diagnostic LEDs. 1–4 (LSB, bit1, bit2, MSB)	Displays port 80 POST codes	Center back edge of board	Each LED can be Off, Green, Amber, Red	See the POST code table
CPU 1 & 2 Fan Fault	Identify fan failure	Front center board	Amber	On = Fault
CPU 1 & 2 Fault	Identify processor failure	1" behind processor socket	Amber	On = Fault
5v Standby	Identify 5v standby power on state	Front left board	Amber	On = 5v standby power on
Power LED	Identify the power state of the system	Control Panel	Green	• Off = Power is off (off or S5) • On = Power on or S0) • Slow Blink = Low power state (S1 – S3)

BIOS POST Beep Codes

The table below lists the POST error beep codes. Prior to system video initialization, the BIOS uses these beep codes to inform users of error conditions. Please note that not all error conditions are supported by BIOS beep codes.

Table 11. POST Error Beep Codes

Number of Beeps	Reason for the beeps and action to take
1, 2, or 3	Memory error. Reseat the memory or replace the DIMMs with known good modules.
4 – 7 or 9 – 11	Fatal error indicating a possible serious system problem. Remove all add-in cards and re-start the system. If the error still occurs, contact your system manufacturer. If the beep codes are not generated after the add-in cards are removed, insert the cards one at a time, booting the system between each card addition, until the beeps again occur to reveal the malfunctioning card.
8	Replace or reseat the system video add-in card. If on-board video is being used, the server board may be faulty.

In addition to the beep codes above, additional beep codes are provided if an Intel® Management Module is installed. The Intel® Management Modules provide the following additional beep codes.

Table 12. Error Beep Codes Provided by Intel® Management Modules

Beep Code	Reason for the beeps and action to take
1	Control panel CMOS clear has been initiated.
1-5-1-1	Processor failure. Reseat or replace the failed processor.
1-5-2-1	No processor is installed or the CPU 1 socket is empty. Reseat or replace the failed processor.
1-5-2-3	Processor configuration error or CPU 1 socket is empty. Reseat or replace the failed processor. In a two-processor system, make sure the processors are identical.
1-5-2-4	Front-side bus select configuration error.
1-5-4-2	DC power unexpectedly lost.
1-5-4-3	Chipset control failure.
1-5-4-4	Power control failure.

7 Technical Reference

Power Supply Specifications

500-W Single Power Supply Input Voltages

- 100-127 V~ at 50/60 Hz; 8.2 A max.
- 200-240 V~ at 50/60 Hz; 4.1 A max.

500-W Single Power Supply Output Voltages

The table below lists the total wattage available from the power subsystem for each voltage.

Table 13. 500-W Power Supply System Output Capability

Voltage	Maximum Current
+3.3 V	16 A
+5.0 V	12 A
+5 V Standby	2 A
+12.0	35 A
-12.0 V	0.5 A



CAUTION

Do not exceed a combined power output of 90 Watts for the +5 V and +3.3 V outputs. Exceeding a combined 90 Watts will overload the power subsystem and may cause the power supplies to overheat and malfunction.

System Environmental Specifications

Table 14. Environmental Specifications

Temperature	Non-operating	-40 °C to 70 °C.
	Operating	10 °C to 30 °C; derated 0.5 °C for every 1000 ft (305 m) to a maximum of 10,000 ft.
Humidity	Non-operating	90 % relative humidity (non-condensing) at 30 °C.
Acoustic noise		7 Bels in sound power for a typical office ambient temperature (18–24 °C). The selection of peripherals may change the noise level.

8 Regulatory and Integration Information

Product Regulatory Compliance

Product Safety Compliance

The server board complies with the following safety requirements:

- EN 60 950 (European Union)
- IEC60 950 (International)
- CE – Low Voltage Directive (73/23/EEC) (European Union)

Product EMC Compliance

The mainboard has been tested and verified to comply with the following electromagnetic compatibility (EMC) regulations when installed in a compatible MAXDATA host system.

- EN55022 (Class A) – Radiated & Conducted Emissions (European Union)
- EN55024 (Immunity) (European Union)
- CE – EMC Directive (89/336/EEC) (European Union)

Product Regulatory Compliance Markings

This product is marked with the following Product Certification Markings:

Table 15. Product Certification Markings

CE Mark	
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Electromagnetic Compatibility Notices

FCC (USA)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit other than the one to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the grantee of this device could void the user's authority to operate the equipment. The customer is responsible for ensuring compliance of the modified product.

Only peripherals (computer input/output devices, terminals, printers, etc.) that comply with FCC Class A or B limits may be attached to this computer product. Operation with noncompliant peripherals is likely to result in interference to radio and TV reception. All cables used to connect to peripherals must be shielded and grounded. Operation with cables, connected to peripherals, that are not shielded and grounded may result in interference to radio and TV reception.

Europe (CE Declaration of Conformity)

This product has been tested in accordance to, and complies with the Low Voltage Directive (73/23/EEC) and EMC Directive (89/336/EEC). The product has been marked with the CE Mark to illustrate its compliance.

Installation Precautions

When you install and test the server board, observe all warnings and cautions in the installation instructions.

To avoid injury, be careful of:

- Sharp pins on connectors
- Sharp pins on printed circuit assemblies
- Rough edges and sharp corners on the chassis
- Hot components (like processors, voltage regulators, and heat sinks)
- Damage to wires that could cause a short circuit

Observe all warnings and cautions that instruct you to refer computer servicing to qualified technical personnel.

Installation Requirements



CAUTION

Follow these guidelines to meet safety and regulatory requirements when installing this board assembly.

Read and adhere to all of these instructions and the instructions supplied with the chassis and associated modules. If the instructions for the chassis are inconsistent with these instructions or the instructions for associated modules, contact the supplier's technical support to find out how you can ensure that your computer meets safety and regulatory requirements. If you do not follow these instructions and the instructions provided by chassis and module suppliers, you increase safety risk and the possibility of noncompliance with regional laws and regulations.

Prevent Power Supply Overload

Do not overload the power supply output. To avoid overloading the power supply, make sure that the calculated total current loads of all the modules within the computer is less than the output current rating of each of the power supplies output circuits.

Place Battery Marking

There is insufficient space on this server board to provide instructions for replacing and disposing of the battery. For system safety certification, the following statement or equivalent statement may be required to be placed permanently and legibly on the chassis near the battery.



CAUTION

Risk of explosion if battery is incorrectly replaced.

Replace with only the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Use Only for Intended Applications

This server board was evaluated as Information Technology Equipment (I.T.E.) for use in computers that will be installed in offices, homes, schools, computer rooms, and similar locations. The suitability of this product for other applications or environments, (such as medical, industrial, alarm systems, test equipment, etc.) may require further evaluation.